METHOD, APPARATUS, DEVICE, AND STORAGE MEDIUM FOR INTERACTION

[0001] The application claims priority to Chinese Patent Application No. 202410628365.2, filed on May 20, 2024, and entitled " METHOD, APPARATUS, DEVICE, AND STORAGE MEDIUM FOR INTERACTION", which is hereby incorporated by reference in its entirety.

FIELD

[0002] Example embodiments in the disclosure generally relate to the field of computers, and in particular, to a method, apparatus, device, and computer-readable storage medium for interaction.

BACKGROUND

[0003] With the rapid development of intelligent technologies, various forms of electronic devices can greatly enrich people's daily life. For example, a user may interact with a target user based on these electronic devices. How to improve interaction efficiency is a key focus.

SUMMARY

[0004] In a first aspect of the disclosure, a method for interaction is provided. The method includes: presenting an interactive interface of a target work, the interactive interface presenting a set of interactive content associated with the target work, the target work being associated with a target user; obtaining target reply content for target interactive content, the target reply content being generated by a processing entity corresponding to the target user in response to the target interactive content satisfying a preset condition, the processing entity being constructed based on a configuration operation of the target user; and presenting, in the interactive interface, the target reply content in association with the target interactive content.

[0005] In a second aspect of the disclosure, an apparatus for interaction is provided. The apparatus includes: a first presentation module configured to present an interactive interface of a target work, the interactive interface presenting a set of interactive content associated with the target work, the target work being associated with a target user; a first obtaining module configured to obtain target reply content for target interactive content, the target reply content being generated by a processing entity corresponding to the target user in response to the target interactive content satisfying a preset condition, the processing entity being constructed based on a configuration operation of the target user; and a second presentation module configured to present, in the interactive interface, the target reply content in association with the target interactive content.

[0006] In a third aspect of the disclosure, an electronic device is provided. The device includes at least one processor; and at least one memory coupled to the at least one processor and storing instructions executable by the at least one processor. The instructions, when executed by the at least one processor, cause the device to perform the method of the first aspect.

[0007] In a fourth aspect of the disclosure, a computer-readable storage medium is provided. The computer-readable storage medium has stored thereon computer-executable instructions executable by a processor to perform the method of the first aspect.

[0008] In a fifth aspect of the disclosure, a computer program product is provided. The computer program

product includes computer-executable instructions which, when executed by a processor, perform the method of the first aspect of the disclosure.

[0009] It should be appreciated that the content described in the content part of the disclosure is neither intended to identify key or essential features of the embodiments in the disclosure, nor is it intended to limit the scope of the disclosure. Other features of the disclosure will be readily envisaged through the following description.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] The above and other features, advantages and aspects of the embodiments in the disclosure will become more apparent in combination with the drawings and with reference to the following detailed description. In the drawings, the same or similar reference numerals refer to the same or similar elements, where:

[0011] FIG. 1 illustrates a schematic diagram of an example environment in which the embodiments in the disclosure may be implemented;

[0012] FIGS. 2A to 2F illustrate respective schematic diagrams of example interfaces according to some embodiments in the disclosure;

[0013] FIGS. 3A to 3D illustrate respective schematic diagrams of example interfaces according to some embodiments in the disclosure;

[0014] FIGS. 4A to 4G illustrate respective schematic diagrams of example interfaces according to some embodiments in the disclosure;

[0015] FIG. 5 illustrates a flowchart of a process for interaction according to some embodiments in the disclosure;

[0016] FIG. 6 illustrates a schematic structural block diagram of an apparatus for interaction according to some embodiments in the disclosure; and

[0017] FIG. 7 illustrates a block diagram of an electronic device capable of implementing multiple embodiments in the disclosure.

DETAILED DESCRIPTION OF EMBODIMENTS

[0018] The embodiments in the disclosure will be described in detail below with reference to the drawings. Although certain embodiments in the disclosure are shown in the drawings, it should be understood that the disclosure may be implemented in various forms and should not be construed as limited to the embodiments set forth herein. Instead, these embodiments are provided for a more thorough and complete understanding of the disclosure. It should be understood that the drawings and embodiments in the disclosure are only for illustrative purposes, and are not intended to limit the protection scope of the disclosure.

[0019] It should be noted that the titles of any sections/subsections provided herein are not restrictive. Various embodiments are described throughout this article, and any type of embodiments may be included under any section/subsection. Furthermore, the embodiments described in any section/subsection may be combined with any other embodiments described in the same section/subsection and/or different sections/subsections in any manner.

[0020] In the description of the embodiments in the disclosure, the term "include/comprise" and similar terms thereto should be understood as open-ended inclusions, that is, "include/comprise but not limited to". The term

"based on" should be understood as "based at least in part on". The term "one embodiment" or "the embodiment" should be understood as "at least one embodiment". The term "some embodiments" should be understood as "at least some embodiments". The following may also include other explicit and implicit definitions. The terms "first", "second", etc. may refer to different or same objects. The following may also include other explicit and implicit definitions.

[0021] The embodiments in the disclosure may involve user data, data acquisition and/or use, etc. These aspects all comply with corresponding laws, regulations and related provisions. In the embodiments in the disclosure, data collection, acquisition, processing, manipulation, transmission, use, etc. are all carried out with the knowledge and confirmation of the user. Accordingly, when implementing the embodiments in the disclosure, the type of data or information involved, its scope of use, and usage scenarios should be disclosed to the user and their authorization should be obtained through appropriate means in accordance with relevant laws and regulations. The specific manner of disclosure and/or authorization may vary depending on the actual circumstances and application scenarios, and the scope of the disclosure will not be limited in this regard.

[0022] The solutions and embodiments described in this specification, if they involve the processing of personal information, will only be processed on a lawful basis (for example, with the consent of the data subject, or as necessary to perform a contract, etc.), and only within the scope specified or agreed upon. A user's refusal to process personal information beyond what is necessary for basic functions will not affect their ability to use those basic functions.

[0023] The embodiments in the disclosure propose an interaction solution. According to this solution, an interactive interface of a target work may be presented, where the interactive interface presents a set of interactive content associated with the target work, and the target work is associated with a target user. Further, target reply content for target interactive content may be obtained, where the target reply content is generated by a processing entity corresponding to the target user in response to the target interactive content satisfying a preset condition, and the processing entity is constructed based on a configuration operation of the target user. Further, the target reply content may be presented in the interactive interface in association with the target interactive content.

[0024] In this manner, in the embodiments in the disclosure, the processing entity corresponding to the target user may be used to process the interactive information of the related work, thereby improving the efficiency of content interaction.

EXAMPLE ENVIRONMENT

[0025] FIG. 1 illustrates a schematic diagram of an example environment 100 in which the embodiments in the disclosure may be implemented. As shown in FIG. 1, the example environment 100 may include an electronic device 110 and a target device 160.

[0026] In the example environment 100, an application 120 supporting interface interaction may run on both the electronic device 110 and the target device 160. The application 120 may be any appropriate type of application for interface interaction.

[0027] In the environment 100 of FIG. 1, if the application 120 is in an active state, the electronic device 110 and the target device 160 may present an interactive interface of a target work based on the application 120. Specifically, the electronic device 110 may present an interface 150, and the target device may present an

interface 180. The target work may be a work posted by a target user 140 to the application 120, where the target work may be a work in any appropriate form such as a video, a voice, a text, etc. A set of interactive content associated with the target work may be presented in the interactive interface, and the interactive content may include comments made by a user who watches the target work, etc.

[0028] In some embodiments, the target user 140 may view, based on the interface 150, comments of other users who watch the work posted by the target user 140, and may reply to the comments.

[0029] In some embodiments, a user 190 may view, based on the interface 180, comments of other users who watch the work posted by the target user 140, and may also comment on the work posted by the target user 140. The user 190 may also view, based on the interface 180, reply content for each comment.

[0030] In some embodiments, the target user 140 may reply to the comment posted by the user 190. In some other embodiments, a processing entity corresponding to the target user 140 may also automatically generate reply content for the comment posted by the user 190.

[0031] The target user 140 or the user 190 may interact with the application 120 via the electronic device 110 and/or its attached devices.

[0032] In some embodiments, the electronic device 110 and the target device 160 may communicate with a server 130, respectively, to implement the provision of the services of the application 120. The electronic device 110 or the target device 160 may be any type of mobile terminal, fixed terminal or portable terminal, including a mobile phone, a desktop computer, a laptop computer, a notebook computer, a netbook computer, a tablet computer, a media computer, a multimedia tablet, a palmtop computer, a portable game terminal, a VR/AR device, a personal communication system (PCS) device, a personal navigation device, a personal digital assistant (PDA), an audio/video player, a digital camera/video camera, a positioning device, a television receiver, a radio broadcast receiver, an e-book device, a game device, or any combination of the foregoing, including the accessories and peripherals of these devices or any combination thereof. In some embodiments, the electronic device 110 or the target device 160 may also support any type of interface for the target user (such as "wearable" circuitry, etc.).

[0033] The server 130 may be an independent physical server, a server cluster or a distributed system composed of multiple physical servers, or a cloud server that provides basic cloud computing services such as cloud services, cloud databases, cloud computing, cloud functions, cloud storage, network services, cloud communications, middleware services, domain name services, security services, content delivery networks, and big data and artificial intelligence platforms. The server 130 may include, for example, a computing system/server, such as a mainframe, an edge computing node, a computing device in a cloud environment, and the like. The server 130 may provide background services for the application 120 supporting interface interaction in the electronic device 110. The server 130 may also provide background services for the application 120 supporting interface interaction in the target device 160.

[0034] The server 130 may establish respective communication connections with the electronic device 110 and the target device 160. The communication connection may be established by wired or wireless means. The communication connection may include but not limited to a Bluetooth connection, a mobile network connection, a universal serial bus (USB) connection, a wireless fidelity (Wi-Fi) connection, etc., and the embodiments in the disclosure will not be limited in this regard. In the embodiments in the disclosure, the server 130 and the

electronic device 110 may implement signaling interaction through the communication connection therebetween. The server 130 and the target device 160 may implement signaling interaction through the communication connection therebetween.

[0035] It should be appreciated that the structure and function of each element in the environment 100 are described for illustrative purposes only, without suggesting any limitation to the scope of the disclosure.

[0036] Some example embodiments in the disclosure will be described below with continued reference to the drawings.

Example Interaction

[0037] An example interaction process according to the embodiments in the disclosure will be described below with reference to FIGS. 2A to 4G. FIGS. 2A to 3D show example interfaces 200A to 300D according to some embodiments in the disclosure, and the interfaces 200A to 300D may be provided by, for example, the electronic device 110 shown in FIG. 1. The interfaces 400A to 400G may be provided by, for example, the target device 160 shown in FIG. 1.

[0038] As shown in FIG. 2A, the electronic device 110 may present the interface 200A, for example, and the electronic device 110 may display a work 210 (target work) in the interface 200A that the target user intends to upload to the application 120. The work 210 may be a work of any appropriate type such as an image, a video, an audio, etc.

[0039] In some embodiments, the electronic device 110 may also display a setting control 220 for the work 210 in the interface 200A, to support the ability of the target user to set related content of the work 210. The setting of the related content of the work 210 may include but not limited to the setting of information such as a topic corresponding to the work 210, a location to post the work 210, and whether to set a processing entity auto reply function for the work 210 (whether to enable the processing entity to respond to the interactive content of the work 210). The processing entity may also be referred to as a virtual avatar, etc.

[0040] The electronic device 110 may present an interface 200B (configuration interface) associated with the work 210 as shown in FIG. 2B based on a trigger (e.g., a click) of the target user on the setting control 220. The configuration interface is a posting interface for the target work to be posted, and the configuration interface is used to obtain configuration information indicating that the processing entity is enabled to respond to the interactive content of the target work. The electronic device 110 may display a processing entity setting entry 230 in the interface 200B to support the ability of the target user to select whether to enable the processing entity auto reply function for the work 210, that is, to support the ability of the target user to select whether to enable the processing entity corresponding to the target user to respond to the interactive content of the work 210. This processing entity is a processing entity for the target user, and different users may correspond to different processing entities.

[0041] The electronic device 110 may present an interface 200C as shown in FIG. 2C based on a trigger (e.g., a click) of the target user on the setting entry 230. To facilitate the target user to understand how to use the processing entity auto reply function, in some embodiments, the electronic device 110 may display prompt information in the interface 200C to prompt the target user about how to use the processing entity auto reply function.

[0042] As an example, prompt information 240 may be displayed in the interface 200C to prompt the target user that the processing entity auto reply is only effective for the current work to be uploaded, not for all works posted by the target user in the application 120. In some embodiments, the electronic device 110 may also set to enable the processing entity auto reply function by default next time when a work is posted. As an example, the prompt information 240 may further include prompt information that the processing entity auto reply function is enabled by default next time when a work is posted.

[0043] The electronic device 110 may display a selection control 250 corresponding to the processing entity auto reply in the interface 200C. The target user may perform a predetermined operation on the selection control 250 to select whether to enable the processing entity auto reply function. As an example, the selection control 250 may be a switch button, and the target user may set the selection control 250 to an "on" state or an "off" state to select whether to enable the processing entity auto reply function.

[0044] In some embodiments, the electronic device 110 may provide an interface 200D as shown in FIG. 2D in response to the selection control 250 being in the "on" state. The electronic device 110 may display, in the interface 200D, a selection control 260 to confirm whether to enable the feature, and may also display instructions 270 on how to use the processing entity auto reply function.

[0045] In some embodiments, the electronic device 110 may present an interface 200E as shown in FIG. 2E in response to receiving that the selection control 250 is set to the "off" state, or the electronic device 110 may present the interface 200E as shown in FIG. 2E based on the trigger of the target user on the selection control 260. Whether the processing entity auto reply function is "off" or "on" may be displayed at the location of the setting control 230 in the interface 200E. Taking FIG. 2E as an example, first prompt information (on) may be displayed at the location of the setting control 230 in the interface 200E, and the first prompt information indicates that the processing entity is enabled to respond to the interactive content of the target work.

[0046] As shown in the interface as shown in FIG. 2A, FIG. 2B or FIG. 2E, a posting control 201 may be displayed in the interface to support that the target user may post the work 210 to be posted to the application 120. The electronic device 110 may provide an interface 200F as shown in FIG. 2F in response to the posting control 201 being triggered by the target user. The electronic device 110 may display, in the interface 200F, prompt information 280 corresponding to a successful posting.

[0047] In some embodiments, in addition to setting whether to enable the processing entity auto reply function before the work 210 is posted, the target user may also set whether to enable the processing entity auto reply function after the work 210 is posted.

[0048] Taking FIG. 3A or FIG. 3B as an example, the interface 300A or the interface 300B is a configuration interface displayed on the electronic device 110 after the work 210 is posted, and this configuration interface is a management interface for the posted target work, and the configuration interface is used to obtain an indication to enable the processing entity to respond to the interactive content of the target work. The interface 300A or the interface 300B may include a processing entity auto reply selection control 310 to support the ability of the target user to select whether to enable the processing entity auto reply function. In some embodiments, the selection control 310 may be displayed in any appropriate location in the interface 300A or the interface 300B. As an example, the selection control 310 may be displayed at a predetermined location of the comment window 301 corresponding to the interface 300A or the interface 300B.

[0049] In some embodiments, the comment window 301 may further include a set of interactive content associated with the work 210, where the work 210 is a work posted by the target user. As an example, the comment window 301 may include comments posted by other users who watch the work 210. The other users are users who have permission to watch the work 210 of the target user.

[0050] In some embodiments, to facilitate the distinguishing of whether the processing entity auto reply function is currently enabled, the electronic device 110 may display a status identification (an example of the first prompt information) on the interface to represent whether the processing entity auto reply function is currently enabled, that is, to indicate whether the processing entity is enabled to respond to the interactive content of the target work. Taking FIG. 3A as an example, a status identification 320 corresponding to "the processing entity auto reply is enabled for the current video" may be displayed in the interface 300A. Taking FIG. 3B as an example, a status identification 330 corresponding to "the processing entity auto reply is disabled for the current video" may be displayed in the interface 300B. In some other embodiments, the electronic device 110 may also set different styles for the selection control 310 in the interface (an example of the first prompt information) to represent whether the processing entity auto reply function is currently enabled. Taking FIG. 3A as an example, the electronic device 110 may set a background color for the selection control 310 in the interface 300A to represent that the processing entity auto reply function is enabled for the current video. Taking FIG. 3B as an example, the electronic device 110 may set no background color for the selection control 310 in the interface 300B to represent that the processing entity auto reply function is disabled for the current video.

[0051] In some embodiments, the electronic device 110 may stop the processing entity from responding to the interactive content of the target work based on a preset operation of the target user, where the preset operation may be a trigger (e.g., a click) on the selection control 310, etc. Taking FIG. 3A as an example, if the processing entity auto reply function is currently enabled, the electronic device 110 may disable the processing entity auto reply function based on the trigger of the target user on the selection control 310.

[0052] In some embodiments, the electronic device 110 may also display an interface 300C as shown in FIG. 3C or an interface 300D as shown in FIG. 3D based on the trigger of the target user on the selection control 310. Taking FIG. 3A as an example, the electronic device 110 may present the interface 300C as shown in FIG. 3C based on the trigger of the target user on the selection control 310 in the interface 300A. The interface 300C may include prompt information 340 for disabling the processing entity auto reply function to prompt the target user that the disabling of the processing entity auto reply function is only effective for the work 210, not for other works. The interface 300C may further include a selection control 350 for confirming to disable the processing entity auto reply function and a selection control 360 for canceling the disabling of the processing entity auto reply function to support the target user to further confirm whether to disable the processing entity auto reply function.

[0053] Taking FIG. 3B as an example, the electronic device 110 may present an interface 300D as shown in FIG. 3D based on the trigger of the target user on the selection control 310 in the interface 300B. The interface 300D may include prompt information 370 for enabling the processing entity auto reply function to prompt the target user that the enabling of the processing entity auto reply function is only effective for the work 210, not for other works. The interface 300D may further include a selection control 380 for confirming to enable the processing entity auto reply function and a selection control 390 for canceling the enabling of the processing

entity auto reply function to support the target user to further confirm whether to enable the processing entity auto reply function.

[0054] As shown in FIG. 4A, the target device 160 may present an interface 400A, for example. The target device 160 may display the work 210 posted by the target user in the interface 400A. The interface 400A may further include a comment window 401. A set of interactive content of the work 210 may be displayed in the comment window 401, and the set of interactive content may be comments of each user who watches the work 210. The comment window 401 may further include a comment input entry 410 to support the ability of the user 190 to input comments for the work 210.

[0055] In some embodiments, the target device 160 may present an interface 400B as shown in FIG. 4B based on a trigger of a user on the input entry 410. The target device 160 may display a soft keyboard in the interface 400B to support the ability of other users to input comments based on the soft keyboard.

[0056] In some embodiments, the target device 160 may further display a prompt control 420 in the interface 200B, which is used to select at least one user to prompt the at least one user to view a comment that user A currently intends to input. The at least one user may be the target user who posts the work 210, or may be other users, etc., which will not be repeated here. As an example, if the at least one user is the target user, the comment sent by the user 190 to prompt the target user to view the comment includes reference content about the target user. In some embodiments, the prompt control may be a mention control (for example, @). For example, the user 190 may use the mention control to add the reference content about the target user to prompt the target user to view this comment.

[0057] In some other embodiments, the user may also input prompt text in the input entry 410 based on the soft keyboard to prompt the target user to view the comment that user A currently intends to input, and the prompt text may further include, for example, text content related to the target user input by the user, such as "author", etc.

[0058] In some embodiments, the target device 160 may present an interface 400C as shown in FIG. 4C based on a trigger of user A on the prompt control 420. The target device 160 may display, in the interface 400C, respective selection controls corresponding to all users who may be selected to be prompted. Taking FIG. 4C as an example, the target device 160 may display a selection control 430 corresponding to user E, a selection control 440 corresponding to user K, etc. in the interface 400C.

[0059] As an example, the target device 160 may present an interface 400D as shown in FIG. 4D based on a trigger of the user on the selection control 440 corresponding to the user K and an input of a comment. It may be displayed at the comment input entry 410 in the interface 400D that the user to be prompted is the user K, and the comment input by the user may also be displayed. The target device 160 may also display a sending control 450 in the interface 400D to support the user to display the comment displayed at the input entry 410 in the comment window 401.

[0060] Taking an interface 400E shown in FIG. 4E as an example, a comment 402 (interactive content) input by the user 190 may be displayed in the comment window in the interface 400E.

[0061] In some embodiments, the electronic device 110 or the target device 160 may acquire target reply content for target interactive content in response to the target interactive content in a set of interactive content satisfying a preset condition, that is, the electronic device 110 or the target device 160 may acquire target reply content

corresponding to a target comment in response to the target comment in the comments for the work 210 satisfying the preset condition. The preset condition may be related to the number of words, the theme, the quality, etc. of the interactive content. As an example, the processing entity corresponding to the target user may only reply to interactive content of a specific theme, and this theme may be configurable by the user. As another example, the processing entity corresponding to the target user may only reply to interactive content in which the number of words of the interactive content is greater than a predetermined threshold. As another example, the processing entity corresponding to the target user may reply to interactive content whose quality is higher than a predetermined threshold, and the quality of the interactive content may be obtained based on any appropriate rule, which will not be repeated here.

[0062] The target reply content is generated by the processing entity corresponding to the target user, and the processing entity is constructed based on a configuration operation of the target user.

[0063] In some embodiments, the target reply content may be generated by the processing entity based on the target interactive content and second contextual information associated with the target work.

[0064] In some other embodiments, the electronic device 110 or the target device 160 may receive additional interactive content for the target reply content. The electronic device 110 or the target device 160 may acquire additional reply content generated by the processing entity based on the additional interactive content, the additional reply content being further based on third contextual information associated with the target reply content. The third contextual information may be other interactive content or reply content associated with the target reply content.

[0065] As an example, multiple rounds of interaction with the processing entity in the same set of interactive information may be associated with the same chat with the processing entity. For example, if the user 190 posts comment A, the virtual avatar of the target user generates reply B for comment A, and the user 190 posts comment C for reply B. Then when generating target reply content for comment C, the virtual avatar of the target user may also generate the target reply content based on historical context in the chat. For example, such historical context may include comment A, reply B, and comment C.

[0066] In some embodiments, in response to the target user enabling the processing entity auto reply function, the electronic device 110 or the target device 160 may provide the target interactive content to a target model to acquire evaluation information indicating whether the processing entity is suitable for processing the target interactive content. The target model may be a model of a processing entity object, or may be another model, etc., which will not be repeated here. For example, if the target theme associated with the target user is makeup, the processing entity corresponding to the target user is suitable for processing interactive content related to makeup. The electronic device 110 or the target device 160 may determine that the target interactive content satisfies the preset condition in response to the evaluation information indicating that the processing entity is suitable for processing the target interactive content.

[0067] In some other embodiments, the electronic device 110 or the target device 160 may determine that the target interactive content satisfies the preset condition in response to the target interactive content including reference content about the target user. As an example, the electronic device 110 or the target device 160 may determine a comment @ the target user as a comment that satisfies the preset condition.

[0068] In some other embodiments, the electronic device 110 or the target device 160 may determine that the

target interactive content satisfies the preset condition in response to the target interactive content matching a target theme, the target theme including a preset first theme and/or a second theme configured by the target user.

[0069] In some other embodiments, the electronic device 110 or the target device 160 may determine that the target interactive content satisfies the preset condition in response to the target interactive content not being processed by the target user within a preset period of time. The preset time may be configured in accordance with requirements. As another example, the electronic device 110 may determine a comment that the target user has not replied to within five minutes as a comment that satisfies the preset condition.

[0070] In some other embodiments, the electronic device 110 or the target device 160 may determine that the target interactive content satisfies the preset condition in response to the target interactive content including reference content about the target user and the target interactive content matching the target theme, the target theme including a preset first theme and/or a second theme configured by the target user.

[0071] In some other embodiments, the electronic device 110 or the target device 160 may determine that the target interactive content satisfies the preset condition in response to the target interactive content including reference content about the target user and the target interactive content not being processed by the target user within the preset period of time, the target theme including the preset first theme and/or the second theme configured by the target user.

[0072] In some other embodiments, the electronic device 110 or the target device 160 may determine that the target interactive content satisfies the preset condition in response to the target interactive content not being processed by the target user within the preset period of time and the target interactive content matching the target theme, the target theme including the preset first theme and/or the second theme configured by the target user.

[0073] In some other embodiments, the electronic device 110 or the target device 160 may determine that the target interactive content satisfies the preset condition if the target interactive content includes the reference content about the target user, the target interactive content is not processed by the target user within the preset period of time, and the target interactive content matches the target theme, the target theme including the preset first theme and/or the second theme configured by the target user. In some embodiments, the electronic device 110 or the target device 160 may present the target reply content in the interactive interface in association with the target interactive content. The target reply content may be configured in any appropriate location in the interactive interface. As an example, the electronic device 110 or the target device 160 may present the target reply content below the target interactive content in the interactive interface.

[0074] For ease of distinction, the electronic device 110 or the target device 160 may present second prompt information associated with the target reply content, the second prompt information indicating that the target reply content is generated by the processing entity corresponding to the target user. In some embodiments, the second prompt information may be tag information corresponding to the processing entity, identification information corresponding to the processing entity, avatar information corresponding to the processing entity, etc. The tag information, identification information, or avatar information corresponding to the processing entity may be different from the tag information, identification information, or avatar information corresponding to the target user, to prompt that the target reply content is not replied by the target user, but by the processing entity corresponding to the target user. As an example, the electronic device 110 or the target device 160 may add an identification of "virtual avatar" at a predetermined position on the avatar corresponding to the target user to

serve as the avatar of the processing entity corresponding to the target user.

[0075] Taking FIG. 4E as an example, the interface 400E of the target device 160 may display a reply 403 generated by the virtual avatar of the user K, and may also display prompt information such as "replied by the author's virtual avatar" for the comment of the user B.

[0076] In some embodiments, the target device 160 may present an interactive window for the processing entity in response to a preset operation on the second prompt information. As an example, the target device 160 may present an interface 400F as shown in FIG. 4F based on a trigger of another user on the avatar of the processing entity corresponding to the user K. A chat entry 470 to enter a chat page with the processing entity corresponding to the user K is provided in the interface 400F. The target device 160 may present an interface 400G as shown in FIG. 4G based on a trigger of another user on the chat entry 470. The interface 400G may display an input component for chat interaction with the processing entity corresponding to the user K to support the ability of user A (user 190) to interact with the processing entity corresponding to the user K. The target device 160 may acquire an input message via the input component in the interactive window. It may be understood that the input message may include at least one of text, voice, or video. The target device 160 may provide a response message for the input message in the interactive window. In some embodiments, the response information may be generated by the processing entity based on the input message and first contextual information associated with the target reply content.

[0077] In some embodiments, the electronic device 110 or the target device 160 may provide a target message from the processing entity in the interactive window, the target message being generated by the processing entity based at least on the target reply content. As an example, the target message may be generated by the processing entity based on the target reply content and the target interactive content for which the target reply content is directed. For example, if the target reply content is a curling iron, the target message in the interactive window may be "Do you want to know how to use this curling iron". In some embodiments, in order to improve user experiences, the electronic device 110 or the target device 160 may use the target information as the first message output by the processing entity in the interactive window.

[0078] In some embodiments, for ease of reminder, the electronic device 110 or/and the target device 160 may send a reminder to the target user indicating that the processing entity has responded to the target interactive content. In some embodiments, the electronic device 110 may provide a target interface in which a reminder of the target interactive content indicating that has been responded to may be displayed. The reminder may be any appropriate type of reminders, for example, displaying a label of "responded" on the target interactive content that has been responded to.

[0079] Based on this manner, in the embodiments in the disclosure, the processing entity corresponding to the target user may be used to process the interactive information of the related work, thereby improving the efficiency of content interaction.

Example Process

[0080] FIG. 5 illustrates a flowchart of an interaction process 500 according to some embodiments in the disclosure. The process 500 may be implemented at the electronic device 110 or the target device 160. The process 500 will be described below with reference to FIG. 1.

[0081] At block 510, the electronic device 110 or the target device 160 presents an interactive interface of a target work, the interactive interface presenting a set of interactive content associated with the target work, the target work being associated with a target user.

[0082] At block 520, the electronic device 110 or the target device 160 acquires target reply content for target interactive content, the target reply content being generated by a processing entity corresponding to the target user in response to the target interactive content satisfying a preset condition, the processing entity being constructed based on a configuration operation of the target user.

[0083] At block 530, the electronic device 110 or the target device 160 presents, in the interactive interface, the target reply content in association with the target interactive content.

[0084] In some embodiments, the process 500 further includes: presenting a configuration interface associated with the target work; and acquiring configuration information via the configuration interface, the configuration information indicating that the processing entity is enabled to respond to the interactive content of the target work.

[0085] In some embodiments, the configuration interface includes a posting interface for the target work to be posted; or a management interface for the posted target work.

[0086] In some embodiments, the process 500 further includes: presenting first prompt information in the interactive interface, the first prompt information indicating that the processing entity is enabled to respond to the interactive content of the target work.

[0087] In some embodiments, the process 500 further includes: stopping responding to the interactive content of the target work with the processing entity in response to receiving a preset operation from the target user.

[0088] In some embodiments, the target interactive content is determined to satisfy the preset condition based on: providing the target interactive content to a target model to acquire evaluation information, the evaluation information indicating whether the processing entity is suitable for processing the target interactive content; and determining that the target interactive content satisfies the preset condition in response to the evaluation information indicating that the processing entity is suitable for processing the target interactive content.

[0089] In some embodiments, the target interactive content is determined to satisfy the preset condition in response to the target interactive content including reference content about the target user; the target interactive content is determined to satisfy the preset condition in response to the target interactive content matching a target theme, the target theme including a preset first theme and/or a second theme configured by the target user; and/or the target interactive content is determined to satisfy the preset condition in response to the target interactive content not being processed by the target user within a preset period of time.

[0090] In some embodiments, the process 500 further includes: presenting second prompt information associated with the target reply content, the second prompt information indicating that the target reply content is generated by the processing entity corresponding to the target user.

[0091] In some embodiments, the process 500 further includes: presenting an interactive window for the processing entity in response to a preset operation on the second prompt information; acquiring an input message via an input component in the interactive window; and providing a response message for the input message in the interactive window.

[0092] In some embodiments, the response message is generated by the processing entity based on the input

message and first contextual information associated with the target reply content.

[0093] In some embodiments, the process 500 further includes: providing a target message from the processing entity in the interactive window, the target message being generated by the processing entity based at least on the target reply content.

[0094] In some embodiments, the process 500 further includes: sending a reminder to the target user indicating that the processing entity has responded to the target interactive content.

[0095] In some embodiments, the target reply content is generated by the processing entity based on the target interactive content and second contextual information associated with the target work.

[0096] In some embodiments, the process 500 further includes: receiving additional interactive content for the target reply content; and acquiring additional reply content generated by the processing entity based on the additional interactive content, the additional reply content being further based on third contextual information associated with the target reply content.

Example Apparatus and Device

[0097] The embodiments in the disclosure further provide a corresponding apparatus for implementing the above method or process. FIG. 6 illustrates a schematic structural block diagram of an apparatus 600 for interaction according to some embodiments in the disclosure. The apparatus 600 may be implemented as or included in the electronic device 110 or the target device 160 as discussed above. Each module/component in the apparatus 600 may be implemented by hardware, software, firmware, or any combination thereof.

[0098] As shown in FIG. 6, the apparatus 600 includes a first presentation module 610 configured to present an interactive interface of a target work, the interactive interface presenting a set of interactive content associated with the target work, the target work being associated with a target user; a first obtaining module 620 configured to obtain target reply content for target interactive content in the set of interactive content in response to the target interactive content satisfying a preset condition, the target reply content being generated by a processing entity corresponding to the target user, the processing entity being constructed based on a configuration operation of the target user; and a second presentation module 630 configured to present, in the interactive interface, the target reply content in association with the target interactive content.

[0099] In some embodiments, the apparatus 600 further includes a third presentation module configured to: present a configuration interface associated with the target work; and acquire configuration information via the configuration interface, the configuration information indicating that the processing entity is enabled to respond to the interactive content of the target work.

[0100] In some embodiments, the configuration interface includes: a posting interface for the target work to be posted; or a management interface for the posted target work.

[0101] In some embodiments, the apparatus 600 further includes a fourth presentation module configured to: present first prompt information in the interactive interface, the first prompt information indicating that the processing entity is enabled to respond to the interactive content of the target work.

[0102] In some embodiments, the apparatus 600 further includes a stopping module configured to: stop responding to the interactive content of the target work with the processing entity in response to receiving a preset operation from the target user.

[0103] In some embodiments, the target interactive content is determined to satisfy the preset condition based on the following process: providing the target interactive content to a target model to acquire evaluation information, the evaluation information indicating whether the processing entity is suitable for processing the target interactive content; and determining that the target interactive content satisfies the preset condition in response to the evaluation information indicating that the processing entity is suitable for processing the target interactive content.

[0104] In some embodiments, the target interactive content is determined to satisfy the preset condition in response to the target interactive content including reference content about the target user; the target interactive content is determined to satisfy the preset condition in response to the target interactive content matching a target theme, the target theme including a preset first theme and/or a second theme configured by the target user; and/or the target interactive content is determined to satisfy the preset condition in response to the target interactive content not being processed by the target user within a preset period of time.

[0105] In some embodiments, the apparatus 600 further includes a fifth presentation module configured to: present second prompt information associated with the target reply content, the second prompt information indicating that the target reply content is generated by the processing entity corresponding to the target user.

[0106] In some embodiments, the apparatus 600 further includes a sixth presentation module configured to: present an interactive window for the processing entity in response to a preset operation on the second prompt information; a second obtaining module configured to: acquire an input message via an input component in the interactive window; and a first provision module configured to: provide a response message for the input message in the interactive window.

[0107] In some embodiments, the response message is generated by the processing entity based on the input message and first contextual information associated with the target reply content.

[0108] In some embodiments, the apparatus 600 further includes a second provision module configured to: provide a target message from the processing entity in the interactive window, the target message being generated by the processing entity based at least on the target reply content.

[0109] In some embodiments, the apparatus 600 further includes a sending module configured to: send to the target user a reminder indicating that the processing entity has responded to the target interactive content.

[0110] In some embodiments, the target reply content is generated by the processing entity based on the target interactive content and second contextual information associated with the target work.

[0111] In some embodiments, the apparatus 600 further includes a receiving module configured to: receive additional interactive content for the target reply content; and a third obtaining module configured to: obtain additional reply content generated by the processing entity based on the additional interactive content, the additional reply content being further based on third contextual information associated with the target reply content.

[0112] The units included in the apparatus 600 may be implemented in various ways, including software, hardware, firmware, or any combination thereof. In some embodiments, one or more units may be implemented using software and/or firmware, such as machine-executable instructions stored on a storage medium. In addition to machine-executable instructions or as an alternative, some or all units in the apparatus 600 may be implemented at least partially by one or more hardware logic components. As an example, rather than a limitation,

example types of hardware logic components that may be used include field programmable gate array (FPGA), application specific integrated circuit (ASIC), application specific standard (ASSP), system on chip (SOC), complex programmable logic device (CPLD), and more.

[0113] FIG. 7 illustrates a block diagram of an electronic device 700 in which one or more embodiments in the disclosure may be implemented. It should be appreciated that the electronic device 700 shown in FIG. 7 is only illustrative, without suggesting any limitation to the function and scope of the embodiments described herein. The electronic device 700 shown in FIG. 7 may be used to implement the electronic device 110 or the target device 160 shown in FIG. 1.

[0114] As shown in FIG. 7, the electronic device 700 is in the form of a general electronic device. The components of the electronic device 700 may include, but are not limited to, one or more processors or processing units 710, a memory 720, a storage device 730, one or more communication units 740, one or more input devices 750, and one or more output devices 760. The processing unit 710 may be an actual or virtual processor and may execute various processes based on the programs stored in the memory 720. In a multi-processor system, multiple processing units execute computer-executable instructions in parallel to improve the parallel processing capability of the electronic device 700.

[0115] The electronic device 700 typically includes multiple computer storage medium. Such medium may be any available medium that is accessible to the electronic device 700, including, but not limited to, volatile and non-volatile medium, removable and non-removable medium. The memory 720 may be a volatile memory (for example, a register, cache, a random access memory (RAM)), a non-volatile memory (such as a read-only memory (ROM), an electrically erasable programmable read-only memory (EEPROM), a flash memory), or any combination thereof. The storage device 730 may be a removable or non-removable medium, and may include a machine-readable medium such as a flash drive, a disk, or any other medium, which may be used to store information and/or data (such as training data for training) and may be accessed within the electronic device 700.

[0116] The electronic device 700 may further include additional removable/non-removable, volatile/non-volatile memory medium. Although not shown in FIG. 7, a disk driver for reading from or writing to a removable, non-volatile disk (such as a "floppy disk"), and an optical disk driver for reading from or writing to a removable, non-volatile optical disk may be provided. In these cases, each driver may be connected to the bus (not shown) by one or more data medium interfaces. The memory 720 may include a computer program product 725 having one or more program modules configured to perform various methods or acts of the various embodiments in the disclosure.

[0117] The communication unit 740 implements communication with other electronic devices through the communication medium. Additionally, the functions of the components of the electronic device 700 may be implemented by a single computing cluster or multiple computing machines, which may communicate through communication connections. Therefore, the electronic device 700 may use a logical connection with one or more other servers, network personal computers (PCs) or another network node to operate in a networked environment.

[0118] The input device 750 may be one or more input devices, such as a mouse, a keyboard, a tracking ball, etc. The output device 760 may be one or more output devices, such as a display, a speaker, a printer, etc. The electronic device 700 may also communicate with one or more external devices (not shown) through the communication unit 740 as needed, the external devices such as a storage device, a display device, etc.,

communicate with one or more devices that enable the user to interact with the electronic device 700, or communicate with any devices (such as a network card, a modem, etc.) that enable the electronic device 700 to communicate with one or more other electronic devices. Such communication may be performed via input/output (I/O) interfaces (not shown).

[0119] According to an illustrative implementation of the disclosure, there is provided a computer-readable storage medium having computer-executable instructions stored thereon, where the computer-executable instructions are executed by a processor to implement the method described above. According to an illustrative implementation of the disclosure, there is further provided a computer program product tangibly stored on a non-transitory computer-readable medium and including computer-executable instructions, and the computer-executable instructions are executed by a processor to implement the method described above.

[0120] Various aspects of the disclosure are described herein with reference to flowcharts and/or block diagrams of methods, apparatuses, devices and computer program products implemented according to the disclosure. It should be appreciated that each block of the flowcharts and/or block diagrams, and combinations of blocks in the flowcharts and/or block diagrams, may be implemented by computer-readable program instructions.

[0121] These computer-readable program instructions may be provided to the processing unit of a general-purpose computer, a special-purpose computer, or other programmable data processing apparatus to produce a machine, such that these instructions, when executed by the processing unit of the computer or other programmable data processing apparatus, produce an apparatus for implementing the functions/acts specified in one or more blocks of the flowcharts and/or block diagrams. These computer-readable program instructions may also be stored in a computer-readable storage medium, and these instructions cause the computer, the programmable data processing apparatus, and/or other devices to work in a specific manner, so that the computer-readable medium storing the instructions includes a manufactured product, which includes instructions for implementing various aspects of the functions/acts specified in one or more blocks of the flowcharts and/or block diagrams.

[0122] The computer-readable program instructions may be loaded onto a computer, other programmable data processing apparatus, or other devices, such that a series of operation steps are performed on the computer, other programmable data processing apparatus, or other devices to produce a computer-implemented process, so that the instructions executed on the computer, other programmable data processing apparatus, or other devices implement the functions/acts specified in one or more blocks of the flowcharts and/or block diagrams.

[0123] The flowcharts and block diagrams in the drawings show the possibly implemented architectures, functions and operations of the systems, methods and computer program products according to multiple implementations of the disclosure. In this regard, each block in the flowchart or block diagram may represent a module, program segment or part of an instruction, and the module, program segment or part of an instruction contains one or more executable instructions for implementing the specified logical function. In some alternative implementations, the functions marked in the blocks may also occur in an order different from that marked in the drawings. For example, two consecutive blocks may actually be performed substantially in parallel, or they may sometimes be performed in the reverse order, depending on the functions involved. It should also be noted that each block in the block diagram and/or the flowchart, and the combination of the blocks in the block diagram and/or the flowchart, may be implemented by a dedicated hardware-based system that performs the specified

functions or acts, or may be implemented by a combination of dedicated hardware and computer instructions.

[0124] The implementations of the disclosure have been described above, and the above description is illustrative, non-exhaustive, and not limited to the disclosed implementations. Without departing from the scope and spirit of the described implementations, many modifications and changes will be apparent to those of ordinary skill in the art. The terms used herein are selected to best explain the principles, practical applications, or improvements to the technology in the market of the implementations, or to enable other ordinary skilled persons in the art to understand the implementations disclosed herein.

CLAIMS

1. A method for interaction, comprising:

presenting an interactive interface of a target work, the interactive interface presenting a set of interactive content associated with the target work, the target work being associated with a target user;

obtaining target reply content for target interactive content, the target reply content being generated by a processing entity corresponding to the target user in response to the target interactive content satisfying a preset condition, the processing entity being constructed based on a configuration operation of the target user; and

presenting, in the interactive interface, the target reply content in association with the target interactive content.

2. The method of claim 1, further comprising:

presenting a configuration interface associated with the target work; and

acquiring configuration information via the configuration interface, the configuration information indicating that the processing entity is enabled to respond to the interactive content of the target work.

3. The method of claim 2, wherein the configuration interface comprises:

a posting interface for the target work to be posted; or

a management interface for the posted target work.

4. The method of claim 1, further comprising:

presenting first prompt information in the interactive interface, the first prompt information indicating that the processing entity is enabled to respond to the interactive content of the target work.

5. The method of claim 1, further comprising:

stopping responding to the interactive content of the target work with the processing entity in response to receiving a preset operation from the target user.

6. The method of claim 1, wherein the target interactive content is determined to satisfy the preset condition based on:

providing the target interactive content to a target model to acquire evaluation information, the evaluation information indicating whether the processing entity is suitable for processing the target interactive content; and

determining that the target interactive content satisfies the preset condition in response to the evaluation information indicating that the processing entity is suitable for processing the target interactive content.

7. The method of claim 1, wherein:

the target interactive content is determined to satisfy the preset condition in response to the target interactive content comprising reference content about the target user;

the target interactive content is determined to satisfy the preset condition in response to the target

interactive content matching a target theme, the target theme comprising a preset first theme and/or a second theme configured by the target user; and/or

the target interactive content is determined to satisfy the preset condition in response to the target interactive content not being processed by the target user within a preset period of time.

8. The method of claim 1, further comprising:

presenting second prompt information associated with the target reply content, the second prompt information indicating that the target reply content is generated by the processing entity corresponding to the target user.

9. The method of claim 8, further comprising:

presenting an interactive window for the processing entity in response to a preset operation on the second prompt information;

acquiring an input message via an input component in the interactive window; and

providing a response message for the input message in the interactive window.

10. The method of claim 9, wherein the response message is generated by the processing entity based on the input message and first contextual information associated with the target reply content.

11. The method of claim 9, further comprising:

providing a target message from the processing entity in the interactive window, the target message being generated by the processing entity based at least on the target reply content.

12. The method of claim 1, further comprising:

sending to the target user a reminder indicating that the processing entity has responded to the target interactive content.

13. The method of claim 1, wherein the target reply content is generated by the processing entity based on the target interactive content and second contextual information associated with the target work.

14. The method of claim 1, further comprising:

receiving additional interactive content for the target reply content; and

obtaining additional reply content generated by the processing entity based on the additional interactive content, the additional reply content being further based on third contextual information associated with the target reply content.

15. An apparatus for interaction, comprising:

a first presentation module configured to present an interactive interface of a target work, the interactive interface presenting a set of interactive content associated with the target work, the target work being associated

with a target user;

a first obtaining module configured to obtain target reply content for target interactive content, the target reply content being generated by a processing entity corresponding to the target user in response to the target interactive content satisfying a preset condition, the processing entity being constructed based on a configuration operation of the target user; and

a second presentation module configured to present, in the interactive interface, the target reply content in association with the target interactive content.

16. An electronic device, comprising:

at least one processor; and

at least one memory coupled to the at least one processor and storing instructions executable by the at least one processor, the instructions, when executed by the at least one processor, causing the electronic device to perform the method of any of claims 1 to 14.

17. A computer-readable storage medium having stored thereon computer-executable instructions which, when executed by a processor, perform the method of any of claims 1 to 14.

18. A computer program product comprising computer-executable instructions which, when executed by a processor, perform the method of any of claims 1 to 14.